Interdependence in the food chain

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Introduction

The food chain represents production stages that range somewhere from agricultural supplies to (retail) food outlets, including agriculture, produce auctions, processing firms, wholesalers, distributors and retailers. The common denominator being that all work with food in one way or the other.

A range of issues have recently presented themselves and have put pressure on the actors within the food chain. Outside the chain there is increasing public concern about issues like food safety, environmentally sound production methods or animal welfare; legislation on these issues has also left its mark on the food chain. Then there is the pressure of increased competition due to the break down of trade barriers within the European Union, the GATT agreement and as a result of adjustments to the Common Agricultural Policy.

Internally, the markets have developed from sellers markets to buyers markets: the demand side is now saturated while on the supply side there is an abundance. Firms are thus forced to act on consumer demand in order to remain competitive. The share of foodstuffs in consumer spending has steadily fallen and has been overtaken by items like housing and vacations. The drop in demand within the food chain has been accompanied by decreasing returns for all involved and has been deflected by a steady concentration of activities and ownership.

In response to this decline a strategy is needed to enable the food chain to 're-invent' itself. In this respect, Porter offers two generic strategies to be followed (Porter [1]). One is to aim at low cost and low pricing, the other is to create new markets and niches by means of differentiation. An additional strategy has also been formulated as focusing on whatever a producer is good at. The basic idea behind all this is to provide value for money, and to translate consumer demands into product properties. This is a move away from marketing one product for the masses and tailoring products for smaller niches

At present there is a tendency towards cooperation within the food chain, or at least parts of it. The idea is to create maximum value for the customer through vertical cooperation. The principle of the value chain now comes forward as each stage within the chain not only handles the product but in so doing adds a certain value to it. This will mean that closer coordination between production stages is needed. If the price mechanism on the spot

market is not effective in communicating differential product characteristics at each stage of the market, this will lead to a replacement by a set of contractual relations that serve as a governance structure to manage the food chain. (Barkema [2]).

This paper will take a closer look at the circumstances surrounding vertical relations in the food chain, e.g. the development of the value chain. It attempts to explain to what extent these circumstances govern the creation of a vertical governance structure.

Theoretical perspective

Alliances

Process Getting a cooperation agreement running vertically within the chain is not the easiest thing to do, for in a normal market situation buyers and sellers are usually competing for the best deal. Therefore the benefits of collaborating should at least outweigh the existing or perceived disadvantages to justify a vertical alignment (van Duren [3]).

The process of alliance formation has generated lots of research into the key ingredients that facilitate success, and partner analyses to ensure a successful partnership. Roughly speaking, it involves a three step process (Schmitz, et.al. [4]). Firstly the awareness of a problem leads to a concept of an alliance; this is then followed by a search for suitable partners; finally a selection of partners needs to be made based on perceived effectiveness and potential of the partnership. The process of alliance formation is consolidated by the arrangement and implementation of an agreement. Both partners thus find that they are better off collaborating and working to their mutual benefit. In this way both sides willingly modify their business practices to improve overall performance.

Interdependence Thus there is a sense of dependence among partners that may lead towards vertical coordination of activities. Apart from sequential processes, partners will also find themselves facing common risks, or depend on each other to develop more efficient forms of production. Therefore interdependencies between firms can be assumed to have a positive impact on the development of vertical coordination in the value chain. The more ones own performance relies on that of another, the more one will be inclined to enter vertical arrangements to secure this. The form in which this takes place may vary from outright integration, provision of resources, or specifying items in a contract.

In the following discussion several variables will be identified that play a role in the dependencies between firms which lead towards vertical coordination. Later they will be brought together into a reference model.

Goal congruence

Dependence is built into the very idea of a value chain. It recognises a continuous flow between production stages which together determine the qualities of the final product. Customer and supplier share a mutual

dependency based on the exchange relations. In fact, the customers' customer would actually be the suppliers' customer, were he to recognise the dependencies between them and their common interest in the final product (Hoppenbrouwer [5]).

The basis underlying these relations is the flow of resources between stages of production, in the form of, for instance, raw materials, budget or income. The theory of industrial networks recognises that activities are connected through resource- dependent relations. Yet all relations are interpreted by those involved, based on the knowledge available and their intentions (Håkansson [6]).

Defining the relation between goal congruence and interdependence can become a rather tricky matter. As shown by Håkansson, the situation is subject to ones individual interpretation and recognition of the underlying dependencies. This process could thus be influenced by personal experience, the local situation, social influence or even culture. Therefore vertical dependencies do exist at all times. In cases of goal congruence they can be used as a foundation to build a governance structure upon, as such goal congruence can be considered as a basic condition underlying vertical coordination. Therefore the more the firms' goals correspond the better the chances of a vertical arrangement developing.

Thus in the value chain approach, congruence of intentions and goals clarifies where you are heading for. In a case study of 10 alliances involving multinational companies it was found that 8 could be considered to have conflicting goals. Yet few were willing to admit to this, as it would herald the break-up of the alliance. Therefore in this area some ambiguity needs to be overcome (Faulkner [7]).

A study by Lorenzoni and Baden-Fuller could serve as another example, this study concentrates on networks of firms (Lorenzoni [8]). In the case of Benetton, the central node has a very limited scope of activities, largely boiling down to coordination. In this way it is able to convey a strategic vision to its partners and rally them behind it. Thus a common view of the partnership gives a clear idea of each partners role within it.

Information

According to Galbraith uncertainty can be described as the difference between the amount of information needed to fulfil a task and the amount that is already present (Galbraith [9]). This would mean that the more uncertainty one faces while making decisions, the more information is needed. In this view information is seen as a steering variable responsible for the quality of the decision. Perfect information would then allow perfect decisions.

However, information is not perfect nor it is ever available as such. It would be extremely difficult to acquire an overview even if full information were available. In the previous section Håkansson's theory has already shown that available knowledge together with the actor's intentions determine a relation. Therefore some form of bounded rationality can be assumed, which is also argued by other authors (Simon [10]). The role of information is even

more complex when the selection and processing processes are considered. Selective perception may steer information-seeking behaviour in troubled directions (Romme [11]). Or the political orientations of actors may distort information that in itself is relevant and solid.

Therefore decisions are based on the information available and the way it is selected and processed. Though full information could eventually be made available, it is unlikely that this will be the case. Consequently, one may assume that information is looked for both internally and externally, according to the needs of the organization. Vertical dependence will increase the more an organization demands information from external sources within the value chain. If this process works both ways, one could assume a positive impact on the development of vertical coordination of activities.

Considering the role of information within the processes of the value chain, one may expect that more open communication will take place between allies. This is illustrated by a study of supply chain management in 14 American chemical companies (Eckstut [12]). The highest rated companies showed multilevel contacts with both suppliers and customers resulting in joint initiatives and free and open exchanges of information. This helped to improve planning capabilities, re-engineer business processes and improve efficiency across the organizations as a whole.

Market structure

Where market structure is concerned, the dependence on resources concentrates on availability. Thompson asserts that in cases of serial interdependence, where one activity depends on the preceding one, some form of vertical integration may occur (Thompson [13]). This means that when there is certainty over availability of an activity there will be no need to integrate. If in another case the activities in a following stage should fan out considerably, a firm would concentrate on the most crucial activities.

More or less in line with this is the influence of opportunism on market governance (Williamson [14]). Opportunism may happen in markets that are oversupplied, giving room to the customer to change from one supplier to another without making high switching costs. Therefore stronger vertical ties may prove useful to safeguard a relation that is seen as important. Basically, if the spot market is able to provide enough alternative resources, there is no reason to depend on for instance one supplier or enter into a vertical relation. If one is vulnerable to switching by customers or suppliers, this may be reason enough to try to bind them in some kind of way.

An investigation into the development of German agriculture showed that the structure of the food industry directly influences the level of vertical coordination towards agriculture (Hof [15]), as larger units of production have more need to secure their inflow of raw materials. In the Westphalia region comparatively large units for pig breeding as well as large slaughterhouses can be found. Compared to the rest of Germany the pork market is more concentrated on both the supply and demand side. As both sides have a

dependence on a continuous flow of production, this leads to higher rates of vertical integration.

The odd thing about vertical coordination is that it combines organizations horizontally embedded in many different market structures. The quality alliances in the Dutch pork industry may serve as an illustration. These would typically involve cooperation on compound feed mills, pig breeders and feeders and slaughterhouses, this could even be extended towards food retailers. Huge differences in market structure can be observed, yet a vertical structure is in place to govern transactions.

An explanation could be that the quality initiative cuts the number of qualified suppliers on the spot market and limits the sources of alternative supplies. Therefore the parties involved are willing to enter into more protective vertical relationships in this specific area.

Asset specificity

Asset specificity comprises particular assets that are uniquely associated to one transaction. If the transaction fails, the low salvage rate of the assets results in losses which can be regarded as switching costs. In transaction cost economics, dependence results from asset specificity. Behaviour characterized by opportunism and bounded rationality presents a risk to a dependent relation. To avoid being taken advantage of, contract and governance structures are used as safeguards (Nooteboom [16]).

This point is also made by Thompson who notes that the technology of a firm may lead to serial interdependence. When one activity thus depends on the preceding one, vertical integration may well occur. By including a preceding or following stage, a firm is able to reduce uncertainty through elimination of a dependent relationship.

However, the generic process in business integration processes is not to integrate the actors vertically or horizontally, but to control the linkages. Therefore considering the core-competence attitude of many companies in the agri-food industry, it is predictable that vertical integration will take place in some situations; mainly when main suppliers contain strategic assets that make their customers vulnerable in terms of high switching costs.

A study of plant-nurseries and vegetable growing in Northern Germany revealed highly dependent relations (Behner [17]). On the one side the nurseries have invested in a very specific field of horticulture. Among others, growing techniques, knowledge and machinery are transaction specific and are of little use outside the sector. On the other side vegetable growers have very specific demands for varieties of seedlings, quality, delivery time, and the like. This cannot be delivered from stock and if anything should go wrong, the entire annual crop could be ruined.

In spite of overcapacity in the market, that would be expected to trigger opportunism, long term relations continue to dominate the picture. Both sides face potentially high switching costs and will continue the relation as long as there is no urgent need to switch.

Summarizing

In this chapter it has been put forward that a relation characterized by mutual dependence may lead to a form of vertical coordination. Goal congruence, information transfer, market structure and asset specificity have been identified as variables that have an effect on the dependencies between firms.

Congruence of goals of vertically dependent partners may facilitate a vertical partnership, however the information demands of the partners signals their mutual dependence. This may drive them towards a more open form of communication and provision of information. If the market structure limits the availability of vital resources or offers few alternatives, vertical coordination may be used to reduce dependency. Finally, if specific investments or costs have been made to accommodate a transaction, a good reason to enter into a vertical relation may be to protect them from opportunism and the possible low salvage value resulting from it.

One may assume that a similar set of variables will not lead to the same outcome in all cases. There might be circumstances that moderate the effect of interdependency on the governance structure. This will be discussed in the next chapter.

Model of vertical interdependence

Product characteristics

The architecture of the food chain and the nature of the relations within it may to some extent depend on the product that is involved. This means that a high degree of dependence may already exist between firms which could increase the likelihood of adapting some form of vertical coordination for the chain as a whole.

To illustrate this point one could review the chain of iceberg lettuce in the USA (Powers [18]. By far the bulk of production takes place in the state of California which is then shipped to the rest of the country. Total distribution time varies from one day to a week, depending on the destination.

Fresh vegetables, including iceberg lettuce, are by nature highly perishable. This means that this particular value chain needs a tightly knitted organization to be able to move the produce around speedily. For one thing it also means that inventories within the chain are low. Through highly frequent deliveries, retailers need only to carry small inventories to secure continuous supplies to their displays. This means that buffering and other speculative functions are not viable in this case. Instead the focus is more on cooperation and reliability.

This case showed that close vertical ties are important to maintain speedily deliveries of iceberg lettuce. The Dutch vegetable auctions work in the opposite way, where highly perishable vegetables are sold more or less on the basis of the spot market. Though growers are closely tied to the auctions, both distributors and retailers operate independently and still manage to transport the produce across Europe. This could mean that once the spot

market provides a reliable supply, one could do without vertical contracting. If product features cannot be delivered adequately by the market, vertical integrations may follow to solve the problem. In this way one can assume that product characteristics interact with the market structure.

Power

According to Pfeffer, the basis of power lies in the control over resources or the control over the supply of information (Pfeffer [19]). However, the use of power in a relationship can be limited as the dependence must be usable which means that the relation has a certain relevance to both parties, the dependent must be able to change his behaviour, and the risk of a backlash must be limited.

A balance of power in a relationship will increase the motivation of the partner to achieve mutual benefits. Neither party is then able to push something through against the wishes of the other. Therefore a balanced power situation may have a positive impact on vertical coordination.

The case of Superbakery may serve as an example to illustrate the balance of power (Davis [20]). The company is a donut bakery based in Pittsburg, USA, that achieved a national coverage in a niche market. It can be classified as a virtual corporation, as all activities have been outsourced apart from product development and customer contacts. The company is mainly left with a coordinating function, where the balance of power can be measured from the ability to control its contractors. The value of the business awarded to outside bakeries is proportionally large. Thus by controlling resources Superbakery is able to exert control over, for instance, product quality and on-time production.

As the business is relatively small for most vendors and distributors, performance requirements are used to exercise control. Thus the companies' information and costing system is used to monitor the contractors' performance, and the relationship is strengthened by close cooperation on improvements. In this way access to performance information allows the company to equal the power balance with its contractors.

Transaction costs

The transaction itself may also lead to costs which can be divided into a pre-contract and post-contract type. The former consists of costs for searching, selecting, negotiating and safeguarding an agreement, which are mainly costs for information and communication. However, the process is subject to bounded rationality and a degree of uncertainty resulting in the second type of transaction costs. The post-contract costs result from maladaption to changes, haggling and settling the argument and bonding to secure commitment (Williamson [14]). This means that the advantages associated with vertical coordination need to be weighed against the potential costs involved.

A typical example of this can be found in grocery distribution in the USA (Thomas, [21]). Concepts like Efficient Consumer Response and Every-Day-Low-Pricing have sprung up to reduce the cost of the distribution system.

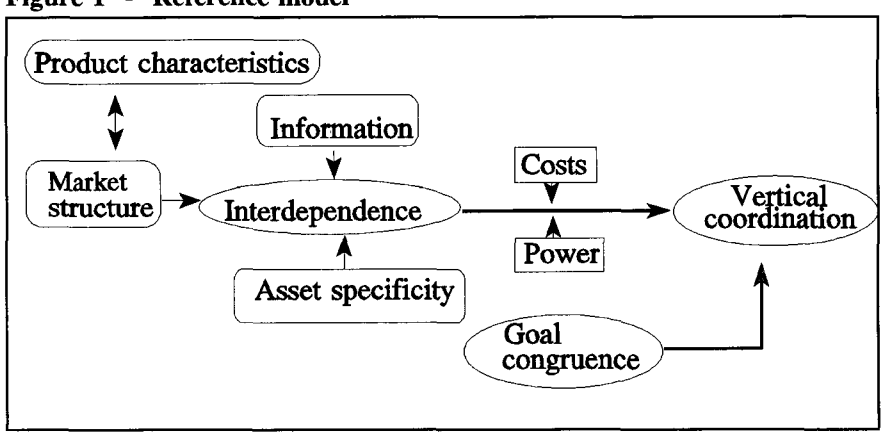
These costs are mainly associated with inventories that result from discounts on large purchases. Efficiency can be increased through ECR and EDLP by means of narrow cooperation with manufacturers on continual replenishment of goods.

Both to wholesalers and self-supplied chains, losing the trade allowances would mean a considerable loss of profits on their buying operations. The self-supplied chains have been more inclined to adopt this concept, as they were able to compensate for the losses elsewhere in their operations. For instance, by generating a higher volume of sales through lower prices and more advertising. Wholesalers tended to view the concept as a threat to their operations. They had little alternative in compensating for their losses but to increase the margin for services charged to their customers. Therefore though ECR and EDLP could be advantageous to the food chain as a whole, the costs of cooperation are not equally distributed and therefore participation levels may differ.

Reference model

In this chapter, three variables have been added that seem to moderate the assumed relation between interdependency of firms and vertical coordination. Product characteristics have their influence on the setting of the market structures which means that the nature of the product or its demands on the value chain may limit the number of alternative sources available. This would signal an interdependency relation leading to vertical coordination structures.

Figure 1 - Reference model



The other two moderators can be seen to work as a catalyst on the development of vertical coordination in the food chain. Even if dependencies exist between firms, it still means that advantages associated with vertical coordination need to be weighed against the potential costs involved. Equally important is the balance in power, which is a potential motivator for cooperation. These can be put together with the variables presented earlier,

and related as shown in figure 1. In the next chapter the relations as described by the model will be applied to a practical case.

ECR in dairy products

Introduction

A case will be examined to test the coherence of the relations that have been described above. It has been taken from a broad project that aims to test the ground and develop a standard for ECR in refrigerated processed foods from producer to retailer.

ECR is an integral concept aiming at improved performance in store assortments, replenishment, promotion and product introduction. This involves close cooperation from both sides. In this case a leading producer in the Dutch dairy industry and a nationally operating self-supplied retail chain will be reviewed. The data have been drawn from interviews with executives within both organisations.

Interdependence

Goal congruence The mission statement of the producer expresses the intention to produce high-grade and innovative dairy products thus creating maximum added value for all stakeholders involved explicitly including retailers and distributors.

The retailer in turn is aiming at creating maximum value for money for its customers by offering the 'best of two worlds'. This combines low prices with high service and as a key element includes an excellent performance in perishables and refrigerated foods.

The interest in the project for both parties is to build some form of competitive advantage. Therefore they tend to look at improvements that can be made to the distribution system, i.e. reducing costs, improving planning and preventing stocks running out. The retailer wants to evaluate his present performance to prepare for future opportunities. The producer uses the project to weigh up alternative options for distribution. Additionally there is some enthusiasm to start working on the performance of dairy products on the shelves and the effectiveness of promotions and product introductions.

Characterised by goals, generally both companies appear to be more or less on the same wavelength. In terms of cooperation, efficiency in distribution would seem a common interest, and is therefore likely to be tackled. The producer has spotted a few more opportunities for cooperation that have not been signalled by the retailer, and which are therefore unlikely to be tackled.

Product character The line of products on offer consists of about 90 different items most of them desserts and drinks. These products are perishable and can be kept for about 3 weeks after production, which means they will spend roughly 2 weeks on the shelves.

This relatively short shelf life means that stocks have to be kept as low as possible. The lower the stocks, the wider the assortment on display, which

ensures that both parties rely on maintaining a dependable flow of products. Therefore the nature of the products would positively influence closer vertical relations between the firms.

Market structure The retailer has a share of 3% of the consumer market, compared to a 28% share that is reached by the market leader. However, it is a member of a purchasing syndicate that covers about a quarter of the market. The producer is market leader for desserts and drinks with about a 25% share. The company produces for the top segment of the market and has a low share in the production of private labels.

Competition in the dairy market is stiff. Rivalry comes from coops that upgrade their products, private labels and foreign brands that have gained access to the distribution channels. As roughly one week of stocking and distribution time would be enough to bring in produce from anywhere in Europe, the space on the shelves is limited, which will intensify the fight.

The market structure provides the retailer with enough alternative sources of dairy produce to allow the retailer to be choosy. Concentrated purchasing clout limits the number of alternative customers for the producer. Therefore the producer depends on the top segment to consolidate its position with the retailer.

Information The very idea of ECR is an open exchange of information, and by joining the project both have been fully aware of this and agreed to this principle. As one executive put it: 'we'll just *have* to be open and be prepared to provide information, you can't run away from it in this project.' This would mean that joining in is in line with the information demands of both organizations.

The retailer has already made headway in utilizing information technology, almost reaching the level of automatic ordering. Clearly, efficiency gains can be made by extending this system to producers. Furthermore, the retailer is working independently on a system where preferred suppliers closely cooperate with the retailer to increase the performance of the product category in the store. This provides a tap on the knowledge of the specialist producers about products and markets, knowledge which retailers typically lack.

A pre-condition to becoming a preferred supplier is producing the private label, which is out of the question from the producer's point of view. To the producer the benefit would lie in improved forecasting of production planning. Foremost, it would mean access to primary market data that can be used to develop competencies in category performance and product introductions.

Exchange of information is in this case not in doubt, it is vital for a project that both are agreed upon. Both stand to benefit from it, yet the retailer has most information to offer.

Asset specificity Naturally the producer is stuck in the dairy market, but has developed a strong brand. His piece of the market provides quality products

with an attractive margin. Beyond that he has a large operation in marketing and in research and development, which is as he himself put it 'our obligation as a market leader'. The share of this retailer in its turnover is quite small.

The retailer has outsourced his physical distribution, therefore no assets are locked in that field. All deliveries should be made to the distribution centre, thus keeping control of his own distribution system.

One of the consequences of cooperation is the development of exit barriers because of the ties between partners. One executive from the retail end stated: 'with ties like this becoming more widespread, it's easier to loosen them again'. Illustrating his keenness on maintaining his flexibility.

The lack of bonds on the side of the retailer leads to low switching costs and allows him to maintain flexibility. The producer tries to bind retailers by presenting himself as a valuable partner, even though dependence in terms of turnover is low.

Moderators

Power The retailer is able to switch suppliers at will, which clearly shifts the balance of power. As one executive recognises, 'It's hard to find cases where the retailers don't have a leading role, apart from production and product development.'. Their control over resources is maintained through distribution to the stores. As a result of this foreign competitors have been allowed on the market through the policy of deliveries from the central distribution centre.

As they are in charge of the ordering system, they also maintain full control over information. Now this is to be shared by means of ECR, they have every intention of selling it at a high price.

The control over resources exerted by the producer comes down to offering high margins and attractive products. This has proved to be a workable strategy. The producer's knowledge of the market has lead to continuous product innovations, few of which have failed after introduction. This too makes him an attractive partner.

Therefore the balance of power between retailer and producer, would initially not favour any kind of cooperation. If cooperation were to start at all, partners should be selected that are somehow able to tip the balance.

Transaction costs As both partners knew each other well from previous business experience the costs in the pre-contractual phase seem very low. These are costs for searching for and selecting partners. To be more precise, at this point in time the contract for cooperation has not yet been signed. Negotiations to shape the contract are the next step and both are assessing the costs and benefits involved before reaching a decision. These costs can be assumed to be equally distributed.

The post-contractual part of the picture shows the building of commitment, regular contacts between the two and resolving eventual disputes. On the side of the retailer, the full infrastructure to do this is already in place. However, to the producer, this goes beyond just delivering on time. This

involves regular customer contacts and exchange of information. Consequently it puts more emphasis on account management on the part of the producer than is common at present. Therefore to be able to cooperate, the producer should further develop these organizational competencies. The costs associated with the transactions, required on entering a partnership like this put an extra burden on the producer.

Vertical coordination

The case study has taken a closer look at the development of a partnership. An incentive is provided by the perishable nature of the product, making the stages within the value chain mutually dependent. Common ground can also be found in corresponding goals, both aim at comparable ends of the market. Yet, in the project the producer proves to be more ambitious. The two also agreed on the necessity to exchange information if cooperation based on ECR is to succeed. These factors combined will have an initial positive impact on the development of vertical cooperation.

However, the retailer has more than a few trump cards up his sleeve. Alternative sources of produce are readily available, he controls the distribution system and has a good grip on the information that is needed. Additionally, he faces low start costs and potentially high benefits combined with a balance of power which is severely distorted in his favour. Thus while dependent, he is in a position to set conditions for any kind of vertical cooperation. The retailer can maintain his cherished flexibility, and secure an independent position.

On the other side, the producer offers a line of products that is highly valued by most retailers. This combined with high grade service and advice to his customers should be the ties that lead to a long term relationship. However, he faces concentration among retailers that occupy an increasingly powerful position. Apart from that, he needs to invest in new organisational capabilities.

Conclusions

The model presented in this paper provides a framework to analyze vertical dependencies among firms. The dependence has been shown to be a function of several variables and explains vertical coordination. Product characteristics, power balance and costs of the transaction have been identified as important moderators in this process. Vertical coordination should be seen as a mechanism to perform transactions between firms.

However, as the model has now been put to its first test, some additional comments should be added. Goal congruence has shown to be important in developing vertical coordination. As when a certain vagueness is involved, such as building a competitive advantage or having correspondence mission statements, it is hard to find a basis for cooperation. Resulting from subjective views, recognising goal congruence should then be followed by some kind of personal commitment.

Also the model has shown that variables may share some interdependence. Information can be seen as one of the sources of power held by the retailer, even though the need for information may spur vertical coordination. Equally, the market structure may be a factor underlying a position of power, as a share of resources could also mean control over resources. Closer attention should be paid to the exact definition of the variables and their relations.

On the side of transaction costs, perhaps a distinction should be made between the costs associated with the transaction and the costs and benefits of the operations. In the case operational costs and benefits, these can mostly be found in distribution. However the definition of transaction costs does not allow the inclusion of distribution.

References

1 Porter, M.E., Competitive strategy, New York, The Free Press,1980.

2 Barkema, A. and M. Drabenstott, The many paths of vertical coordination: structural implications for the US food system, Agribusiness, no 5, 1995.

3 Van Duren, E. et. al., Forging vertical strategic alliances, Choices, no 2, 1995.

4 Schmitz, J.M., et.al., ECR alliances, a best practices model, Joint Industry Project on ECR, 1995.

5 Hoppenbrouwer J. et. al., The supplier is also the customers' supplier, Third international Ipsera conference.

6 Håkansson, H. and J. Johanson, The network as a governance structure, The embedded firm: on the socioeconomics of industrial networks, London, Routledge, 1993.

7 Faulkner, D., The management of alliances, Strategic alliances, cooperating to compete, McGraw-Hill, 1995.

8 Lorenzoni, G. and C. Baden-Fuller, Creating a strategic centre to manage a web of partners, Californian Management Review, no 3, 1995.

9 Galbraith, J.R., Ontwerpen van complexe organisaties. Alphen aan den Rijn, Samson Uitgeverij, 1976.

10 Simon, H.A., Administrative behaviour. New York, Macmillan Company, 1961.

11 Romme, A.G.L., Self-organization perspective on strategy formation. Maastricht, Datawyse, 1992.

12 Eckstut, M.K. and V.R. Gupta, Supply chain management in the chemical industry, New York, AT Kearney.

13 Thompson, J.D., Organizations in action. New York, McGraw-Hill, 1967.

14 Williamson, O.E., The economic institutions of capitalism. New York, The Free Press, 1985.

15 Hof, K., Ein Modell zur faktorenanalytischen Bestimmung der Transaktionskosten auf Agrarmarkten, Agrarwirtschaft, no 7, 1994.

16 Nooteboom, B., Management van partnerships in toeleveren en uitbesteden. Schoonhoven, Academic Service, 1994.
17 Behner, M. and V. Bitsch, Abnehmer-Lieferanten-Beziehungen im Produktionsgartenbau. Agrarwirtschaft, no 3, 1995.
18 Powers, N.J., Sticky short-run prices and vertical pricing: evidence from the market for iceberg lettuce, Agribusiness, no 1, 1995.
19 Pfeffer, J., Organizational design. Arlington Heights, AHS Publishing Corporation, 1978.
20 Davis, T.R.V. and B.L. Darling, The Super-Bakery case, Organizational Dynamics, no 1, 1995.
21 Thomas, J.M. et. al., Analysis of grocery buying and selling practices among manufacturers and distributors: Implications for industry structure and performance, Agribusiness, no 6, 1995.